REMARKS

Claims 1-18, as amended, are pending for the Examiner's consideration. Claims 15 and 18 have been amended as noted above to respond to an informality rejection. The amendments are supported throughout the specification. As these amendments do not introduce new matter, Applicant respectfully requests favorable reconsideration and allowance of the application in view of the above amendments and the following remarks.

The sections set forth below are presented in the same order as that of the Action for ease of reference.

A. Double Patenting Rejection

Claims 1-18 are provisionally rejected under 35 U.S.C. § 101 as claiming the same invention as that of claims 1-18 of copending Application No. 10/847,276. Applicant acknowledges the rejection and the similarity of the claims pending in both applications. As indicated by the Examiner by issuing a provisional rejection, however, copending Application No. 10/847,276 has not yet issued as a patent. As such, Applicant cannot assess the double patenting rejection at this time or until copending Application No. 10/847,276 is allowed or issues. If the provisional nature of the rejection is ever removed, Applicant will address the rejection at that time.

B. Informality Objection

Claim 15-18 are objected to because, according to the Office Action, the language of those claims were unclear. Although the language of these claims is believed to be sufficiently clear, to expedite prosecution Applicant has amended claim 15 along the lines suggested by the Examiner. In particular, however, Applicant has moved the preamble language into the body of the claim to more positively recite wherein the state machine sets the voltage supplied to the electric motor, as also recited in claim 4. The entire claim, of course, is directed to A system for controlling the speed of an electric motor.

Claim 18 has also been amended to conform the language of the claim to recite "a closed loop feedback loop." These cosmetic changes further clarify claims 15 and 18, and dependent claims 16 and 17. No modification to the claim scope is intended by these changes, either to enlarge or to narrow the claim. The Applicant respectfully submits that this rejection has been obviated and should be withdrawn.

C. Enablement Rejection under 35 U.S.C. § 112, first paragraph

Claims 10-12 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The Office Action alleges that, with respect to claims 10-12, it is unclear from the specification what components, other than an electric motor, the system of claim 10 could control.

Claim 10 recites a system comprising a component and a controller as defined by claim 1. Those of ordinary skill in the art, in view of the specification, will readily appreciate that the claimed system can be configured with components other than an electric motor to operate with the controller. Such an appreciation can be derived from the knowledge available to those of ordinary skill in the art, particularly in view of the guidance provided by the specification of the present application based on the characteristics of the electric motor and the controller circuitry described therein.

Applicant further acknowledges that the language of claim 1 is directed to an electric motor linear controller. Claim 1, however, does not recite the motor itself as being a feature of the claim. As such, those of ordinary skill in the art will readily appreciate that the controller can be applied to controlling components other than a motor.

D. Claim Rejection under 35 U.S.C. § 102(b) in view of Okawa

Claims 1, 10, and 11 are rejected under 35 U.S.C. § 102(b) as being anticipated by Okawa et al. (6,157,160). All the features of claims 1, 10, and 11 are not shown or suggested by Okawa.

For example, the electric motor linear speed controller of claim 1 comprises, among other things, a closed loop feedback means for monitoring and setting the voltage across the motor. Okawa does not show or suggest such a feature. Okawa shows a system that supplies a three-phase power current signal to an electric motor. The Office Action relies on current sensors 1, 2, and 3 in Okawa to show the feedback means of claim 1. On the contrary, current sensors 1, 2, and 3 sense *actual current level* in the lines driving the motor. Sensors 1, 2, and 3 are not voltage sensors nor do they sense the voltage across the motor, as presently recited. See Okawa, Col. 3, lines 35-39. As such, all the features of claim 1 are not disclosed, much less suggested, by Okawa.

Moreover, Okawa is a current-driver based system, wherein the motor is driven by driving a *current* that is switched on for each phase of the motor to drive the motor. In Okawa, current sensing is used to because the current in the power lines is in phase with magnetic flux, so that the system can determine rotor position in synchronizing switching

action of the three phase controller (inverter). As such, current sense allows for position sensing in such systems, which would not be achievable in Okawa by modifying the current sensors with voltage sensors. This further clarifies that Okawa cannot disclose one or more voltage sensors, as presently recited.

Moreover, claims 10 and 11 depend either directly or indirectly on claim 1, and thus these claims are also not anticipated or obvious in view of Okawa for at least the same reasons. In view of the above remarks, because each and every recited feature is not identically disclosed, much less suggested, by Okawa, Applicant respectfully requests reconsideration and withdrawal of the 35 U.S.C. § 102(b) rejection of claims 1, 10, and 11.

E. Claim Rejection under 35 U.S.C. § 102(b) in View of Archer

Claims 4-7, 9, and 15-17 are rejected under 35 U.S.C. § 102(b) as being anticipated by Archer et al. (5,592,058). The features of claims 4-7, 9, and 15-17, however, are not disclosed or suggested by Archer.

For example, the circuit arrangement of claim 4 comprises, among other things, a controller logic circuit for operating a controller logic finite state machine, wherein the state machine sets the voltage supplied to an electric. motor. The Examiner relies on ASIC 112 and inverter bridge 404 of FIG. 4 of Archer to show the state machine of claim 4. The output of ASIC 112, however, does not set the voltage that is supplied to the electric motor as is explicitly recited in claim 4. As was the case in Okawa, Archer is a *current-driver* based system that switches power transistors to drive *current* to the three phase motor in order to run the motor. In Archer, the output of ASIC 112 sets the *current* that is supplied to the motor. The outputs of ASIC 112 selectively activate the current drivers in inverter bridge 404 of Archer to supply a set current to the windings of the motor. Thus, Archer shows a system that includes circuitry that sets the current that is supplied to an electric motor, but Archer does not disclose--much less suggest--that it has control over setting the voltage that is supplied as is recited in claim 4.

Further by way of example, claim 4 also comprises a closed loop feedback circuit for generating a signal indicating the voltage across the electric motor. With respect to this feature, the Examiner relies on back EMF sensing circuit 126A of Archer. On the contrary, Archer explains that, at any given time, two of the three power signal lines that supply a drive current to the motor are energized and the third line is used in the back EMF sensing circuit for position sensing by observing the motor phase back EMF waves when current in the selected phase has decayed to zero. Clearly, this information cannot indicate the voltage

across the motor, as presently recited, at least because it is only measuring voltage from one of the three power lines connected to the motor. Accordingly, the closed loop feedback circuit of claim 4 is also not identically disclosed, much less suggested, by Archer.

With respect to independent claim 15, Archer fails to disclose or suggest even a closed loop feedback loop means, for monitoring the voltage across an electric motor. As explained above in connection with the claim 4, Archer does not include or suggest circuitry that indicates the voltage across the electric motor. As such, Archer also does not include circuitry that monitors the voltage across the electric motor, as recited in claim 15.

Moreover, claims 4 and 15 are not obvious in view of Archer because Archer implements a *current-driver* architecture, while claims 4 and 15 recite a voltage-based architecture. As discovered by the inventor of the present application, the claimed voltage-based system presently recited has advantages over the *current-based* driver systems in the prior art, such as improved control over motor speed.

Moreover, claims 5-7, 9, and 16-17 depend either directly or indirectly on claims 4 and 15, and thus these claims are also not anticipated or obvious in view of Archer for at least the same reasons. In view of the above remarks, Applicant respectfully requests reconsideration and withdrawal of the 35 U.S.C. § 102(b) rejection of claims 4-7, 9, and 15-17.

F. Claim Rejection under 35 U.S.C. § 102(b) in View of Sugiyama

Claims 4, 5, 7-9, and 15-17 are rejected under 35 U.S.C. § 102(b) as being anticipated by Sugiyama et al. (6,339,310). All the features of claims 4, 5, 7-9, and 15-17, however, are not shown or suggested by Sugiyama.

For example, the circuit arrangement of claim 4 comprises, among other things, a controller logic circuit for operating a controller logic finite state machine, wherein the state machine sets the voltage supplied to an electric motor. As in Archer, Sugiyama is a *current* driver system. In Sugiyama, the output of determining circuitry 17 and comparing circuit 16, which are relied on by the Examiner to show a state machine, set the current supplied to the motor to drive the motor. This circuitry does not the set the voltage supplied to the motor, as recited in claim 4.

Additionally, for example, claim 4 also recites a closed loop feedback circuit for generating a signal indicating the voltage across the electric motor. With respect to this feature, the Examiner relies on sensor 2 in Sugiyama for sensing the voltage across the motor. Sugiyama, however, clearly and explicitly describes that sensor 2 is a *current sensor* for

sensing the current in a corresponding power of the three motor. Sugiyama states that the sensor generates a voltage signal, but that this signal reports on the *current magnitude*, not the voltage, which may vary in operation due to various events without changing the current level. Thus, Sugiyama fails to teach these inventive features of claim 4.

With respect to independent claim 15, claim 15 is not anticipated or obvious in view of Sugiyama, at least because Sugiyama fails to disclose or suggest a closed loop feedback loop means for monitoring the voltage across an electric motor. As explained above in connection with the claim 4, Sugiyama completely fails to include circuitry that indicates the voltage across the electric motor. Sugiyama shows only current sensors. Accordingly, claim 15 cannot be anticipated because Sugiyama does not include circuitry that can monitor voltage across the motor as presently recited.

Moreover, claims 4 and 15 are not obvious in view of Archer because Sugiyama implements a current-driver architecture, however, claims 4 and 15 are voltage-based arrangements. Voltage-based systems have advantages such as better control over motor speed. Thus, even if motivation existed to combine Archer and Sugiyama, the combination still fails to disclose the presently recited voltage-based features.

Moreover, claims 5, 7-9, and 16-17 depend either directly or indirectly on claims 4 and 15, and thus these claims are also not anticipated or obvious in view of Sugiyama for at least the same reasons. In view of the above remarks, Applicant respectfully requests reconsideration and withdrawal of the 35 U.S.C. § 102(b) rejection of claims 4, 5, 7-9, and 15-17.

G. Claim Rejections under 35 U.S.C. § 103(a)

Claims 2, 3, 13, and 14 rejected under 35 U.S.C. § 103(a) as being obvious over Okawa in view of Welch (5,486,747). The features of claims 2, 3, 13, and 14 are not shown or suggested by Okawa and Welch, even when taken in combination. Claim 2-3 ad 13-14 all depend either directly or indirectly from claim 1, and thus these claims are not obvious in view of Okawa for at least the reasons provided above. Moreover, Welch does not alleviate the deficiencies in Okawa, which were identified above. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejection of claims 2-3 and 13-14 in view of the lack of *prima facie* obviousness in the references of record.

Claim 18 is also rejected under 35 U.S.C. § 103(a) as being obvious over Okawa in view of Welch. The features of claim 18 are not, however, shown or suggested by Okawa and Welch even in combination. For example, claim 18 comprises, among other things, a

closed loop feedback loop for monitoring the voltage across the electric motor. As explained above, Okawa implements *current sensors* that would not be able to sense the voltage across in order for the circuitry to monitor that voltage, as presently recited. In addition, Welch also fails to teach such a functionality. Accordingly, claim 18 is also new and non-obvious in view of Okawa and Welch. In view of the foregoing remarks, Applicant respectfully requests reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejection of claim 18, as no *prima facie* case of obviousness has been made on the record.

H. Conclusion

In view of the remarks made herein, Applicant respectfully submits that the entire application is in condition for allowance, early notice of which would be appreciated. Should the Examiner not agree that all pending claims are allowable, then a personal or telephonic interview is respectfully requested to discuss any remaining issues and expedite the eventual allowance of these claims.

Respectfully submitted,

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Jeffrey A. Wolfson (Reg. No. 42,234)

WINSTON & STRAWN LLP
CUSTOMER NO. 28765

(202) 371-5770